

Remarks

Claims 1-17 are pending in the application and were rejected. By this Amendment, claims 1 and 10 have been amended. Reconsideration of the claims is respectfully requested. No new matter has been added.

Rejection Under 35 U.S.C. §112

Claims 10 and 11-17 were rejected under 35 U.S.C. § 112, second paragraph as being indefinite. In claim 10, the Examiner stated that the phrase “a first main bearing” was not supported by the specification. Applicants have amended claim 10 to recite “a first main bearing journal” as found in paragraph [0043]. The Examiner also stated that there was lack of support in the specification for “blowing sand into each of a plurality of core boxes ...”, “setting the resin coated sand ...”, and “assembling the plurality of core boxes with oil gallery cores to form a core box assembly” as recited in claim 11, “urethane resin” as recited in claim 12, and “vent screed” as recited in claim 13. Applicants have added paragraph [0069.1] to recite these features. Paragraph [0069.1] is supported by the original specification. Thus, no new matter has been added and Applicants believe this rejection has been cured.

Rejection Under 35 U.S.C. § 102

Claims 1, 6 and 7 were rejected under § 102(b) as being anticipated by U.S. Patent No. 1,992,677 issued to Sorensen (hereinafter “Sorensen ‘677”). Claim 1 requires a plurality of sand cores “each having ... a plurality of core bolt holes that are aligned as the core assembly is assembled and each of which receive a core bolt”. Sorensen ‘677 does not disclose a plurality of sand cores each having a plurality of core bolt holes each of which receive a core bolt. Instead, Sorensen ‘677 discloses a mold having “sixteen core plates ... given reference numerals 1 through 16” (column 2, line 29), “a metal bottom plate 20 upon which the core plates ... rest” (column 2, lines 39-40), and “a metal top plate 21” (column 2, lines 40-41). Core plates 1-16 do not have a plurality of bolt holes as required by the present invention. Rather, four tie rods 22 extend through metal plates 20 and 21 to “secure the metal plates 20 and 21 together, thereby firmly securing the cores plates, 1 through 16, in position”

(see column 2, lines 41-44 and Figure 3). Consequently, a *prima facie* case has not been established and Applicants respectfully request that this rejection be withdrawn. Since claims 6 and 7 depend on claim 1, the rejection of these claims is believed to be overcome for the same reasons.

Rejection Under 35 U.S.C. § 103

Claims 2-5 were rejected under § 103(a) as being unpatentable over Sorensen '677 in view of U.S. Patent No. 5,280,822 issued to Bullock (hereinafter "Bullock '822"). Claims 2-5 depend on claim 1. As previously discussed, A *prima facie* case has not been established for the rejection of claim 1. Moreover, Bullock '822 does not cure the deficiencies of Sorensen '677. Indeed, Bullock '822 does not disclose a plurality of sand cores, let alone a plurality of core bolt holes each of which receive a core bolt as required by claims 1-5. Consequently, Applicants respectfully believe that a *prima facie* case has not been established and request that this rejection be withdrawn.

Claims 8-9 were rejected under § 103(a) as being unpatentable over Sorensen '677 in view of U.S. Patent No. 5,495,885 issued to Fowlkes et al. (hereinafter "Fowlkes '885"). Applicants believe this rejection is improper for the following reasons.

Applicants respectfully believe that there is no suggestion or motivation for combining Fowlkes '885 and Sorensen '677. First, the cited references are directed to different problems. Specifically, Fowlkes '885 is directed to the problem of minimizing turbulence within a housing of a hermetic compressor to reduce undesirable agitation of oil in an oil sump (column 1, lines 12-15). In contrast, Sorensen '677 is directed to the problem of compensating for shrinkage of a crankshaft upon cooling (column 1, lines 22-24). Therefore, the nature of the problem to be solved is not a source for motivation to combine Fowlkes '885 and Sorensen '677. Second, there is no teaching in Fowlkes '885 of applicability outside of the hermetic compressor art. More specifically, Fowlkes '885 does not teach or even remotely suggest a method for making a crankshaft for an engine. Third, the Examiner failed to identify or explain any specific understanding or principle within the knowledge of a skilled

engine crankshaft artisan that would motivate one with no knowledge of the present invention to make the combination. Instead, the Examiner has engaged in impermissible hindsight analysis by looking to the present invention for the insight to combine the compressor counterweight assembly of Fowlkes '885 with the engine crankshaft of Sorensen '677. As a result, Applicants respectfully believe that the Examiner has failed to make a *prima facie* case under § 103(a).

Even if Fowlkes '885 could properly be combined with Sorensen '677, a *prima facie* case would not be established since Fowlkes '885 does not cure the deficiencies of Sorensen '677. Indeed, Fowlkes '885 does not disclose a plurality of sand cores, let alone a plurality of core bolt holes each of which receive a core bolt as required by claims 1, 8 and 9. Consequently, Applicants respectfully believe that a *prima facie* case has not been established and request that this rejection be withdrawn.

Claims 11-12 and 14-15 were rejected under § 103(a) as being unpatentable over Sorensen '677 in view of Bullock '822 and further in view of U.S. Patent No. 3,965,962 issued to Tanaka et al. (hereinafter Tanaka '962"). Applicants believe this rejection is improper for the following reasons.

Applicants respectfully believe that there is no suggestion or motivation for combining Tanaka '962 with either Sorensen '677 or Bullock '822. First, the cited references are directed to different problems. Tanaka '962 is directed to the problem of eliminating casting defects associated with ductile cast iron as compared to flake graphite cast iron (column 1, lines 25-27). In contrast, Sorensen '677 is directed to the problem of compensating for shrinkage of a crankshaft upon cooling (column 1, lines 22-24) while Bullock '822 is directed to reducing the complexity and costs of manufacturing a cylinder block (column 2, lines 41-42). Therefore, the nature of the problem to be solved is not a source for motivation to combine Tanaka '962 with Sorensen '677 or Bullock '822. Second, the Examiner failed to identify or explain any specific understanding or principle that would motivate one with no knowledge of the present invention to make the combination. Third, Tanaka '962 is non-

analogous art. More specifically, Tanaka '962 is drawn to a conventional clamshell mold having a pair of mold halves that are split longitudinally at a parting line (column 7, lines 10-17 and Figure 3). As stated in the Background Art section, the present invention specifically is intended to overcome various disadvantages of conventional clamshell designs. Tanaka '962 does not teach or even remotely suggest applicability to an assembly having a plurality of core boxes that each form an axial segment of a crankshaft as required by the present invention. Instead, the Examiner has engaged in impermissible hindsight analysis by looking to the present invention for the insight to combine the conventional clamshell mold of Tanaka '962 with the one piece foundary core for a cylinder block of Bullock '822 (see column 2, lines 21-23) and the axially segmented core box assembly of Sorensen '677. As a result, Applicants respectfully believe that the Examiner has failed to make a *prima facie* case under § 103(a).

Second, even if the references could be properly combined, a *prima facie* case has not been established. Claim 11 requires "coating sand with a resin", "blowing sand into each of a plurality of core boxes", "setting the resin coated sand", "assembling the plurality of core boxes with oil gallery cores", "securing the core box assembly together with elongated fasteners that extend longitudinally through the core box assembly", and "placing the core box assembly into a cope/drag mold". Sorensen '677 does not recite any of these steps. Instead, Sorensen '677 simply recites a "plurality of super-imposed plates each formed of core sand" that are "baked in a conventional manner" (column 2, lines 22-23 and 50-52). Neither Bullock '822 nor Tanaka '962 cures the deficiencies of Sorensen '677 since neither reference discloses blowing sand into each of a plurality of core boxes, securing the core box assembly together with elongated fasteners that extend longitudinally through the core box assembly, or placing the core box assembly into a cope/drag mold. Consequently, a *prima facie* case has not been established for claim 11. Since claims 12, 14 and 15 depend on claim 11, the rejection of these claims is believed to be overcome for the same reasons. Additionally, none of these references recites a urethane resin as required by claim 12 or an oil gallery core that is a high temperature resin bonded sand core as required by claim 15. For these reasons, Applicants respectfully believe that a *prima facie* case has not been established and request that this rejection be withdrawn.

Claim 13 was rejected under § 103(a) as being unpatentable over Sorensen '677 in view of Bullock '822 and further in view of Tanaka '962 and still further in view of U.S. Patent No. 5,911,267 issued to Witte et al. (hereinafter "Witte '267"). Claim 13 depends on claim 11. Therefore, Applicants believe this rejection has been overcome for the reasons previously discussed. In addition, Witte '267 does not disclose a venting a catalyst gas through a vent screed as required by claim 13. In the Office Action, the examiner stated that bore 30 in Witte '267 was a "vent screed ... connected to a catalyst source 103" (see Office Action, page 5, paragraph 10). However, the bore in Witte '267 does not vent a catalyst gas. Instead, "the flow of catalyst is stopped and air or another gas is introduced through the bore 30 into the core box 11 to purge the core box 11 of catalyst." (column 3, lines 40-42). There is absolutely no teaching or suggestion of the bore 30 being used as anything other than an inlet for a catalyst gas. Moreover, it is illogical to conclude that the bore 30 can be used as a vent screed to exhaust catalyst gas when the bore is simultaneously being used as an inlet cause the catalyst gas to be purged. For these reasons, Applicants respectfully believe that a *prima facie* case has not been established and request that this rejection be withdrawn.

Claim 16 was rejected under §103(a) as being unpatentable over Sorensen '677 in view of Bullock '822 and further in view of Tanaka '962 and still further in view of Fowlkes '885. Applicants respectfully believe that there is no suggestion or motivation for combining Fowlkes '885 and Sorensen '677 as previously discussed. Moreover, there is no suggestion or motivation to combine Fowlkes '885 with Bullock '822 or Tanaka '962 since these references are drawn to different problems, are in non-analogous fields of art, and the Examiner failed to identify or explain any specific understanding or principle that would motivate one with no knowledge of the present invention to make the combination. As such, Applicants respectfully believe that the Examiner has failed to make a *prima facie* case under § 103(a).

Even if these references could be properly combined, a *prima facie* case would still not be established. Contrary to the Examiner's assertion, Tanaka '962 does not disclose a tungsten steel insert. Instead, Tanaka '962 discloses a "counterweight 50 ... formed from

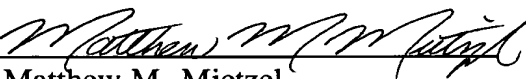
remotely suggest inserting an insert into a core box assembly as required by claim 16. For these reasons, Applicants respectfully believe the rejection of claim 16 is improper and request that it be withdrawn.

Claim 17 was rejected under §103(a) as being unpatentable over Sorensen '677 in view of Bullock '822 and further in view of Tanaka '962 and still further in view of U.S. Patent No. 6,364,425 issued to Marquis (hereinafter "Marquis '425"). Claim 17 depends on claim 11. Therefore, Applicants believe this rejection has been overcome for the reasons previously discussed.

Conclusion

Applicants have made a genuine effort to respond to the Examiner's objections and rejections in advancing the prosecution of this case. Applicants believe all formal and substantive requirements for patentability have been met and that this case is in condition for allowance, which action is respectfully requested.

Respectfully submitted,

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